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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,550	04/07/2005	Takayuki Kotani	9694-000020/NP	7632

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EXAMINER

BORIN, MICHAEL L

ART UNIT

PAPER NUMBER

1631

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DELIVERY MODE

04/14/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/530,550

Applicant(s)

KOTANI ET AL.

Examiner

Michael Borin

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-893)
Paper No(s)/Mail Date 04/07/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Status of Claims

Claims 1-6 are pending.

Response to restriction requirement filed 01/28/2008 is acknowledged. Applicant elected, without traverse, Group I, claims 1,4 and claims 3, 6(in part). Claims 2,5 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected groups. Cancellation of claims 2,5, and amendment of claims 3,6 to read on elected invention are requested.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy of Japanese application 2002-293383 has been filed this Application on 04/07/2005.

Information Disclosure Statement

Applicants' Information Disclosure Statement filed 4/07/2005 has been received and entered into the application. Accordingly, as reflected by the attached completed copies of forms PTO-1449, the cited references have been considered.

Claim Rejections - 35 USC § 112, second paragraph.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1,3,4,6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The rejection is applied for the following reasons, as applied to claim 1; consequently, claims 3,4,6 are rejected for the same reasons.

A. Claim 1 is indefinite due to the lack of clarity of the claim language failing to recite a final process step, which agrees back with the preamble. The preamble states that it is a method of displaying characteristics of a compound, however the claim recites a final step of analyzing interactions between atoms of a plurality molecules and representative points. There is no indication that such interaction analysis is anyhow related to the stated objective of displaying characteristics of a compound.

B Claim 1, preamble: The claimed is directed to structure-activity relationship method. While the method step address analysis of coordinates of atoms (i.e. structure analysis), there are no steps directed to determining any activity, and thus to determining any "structure-activity relationship". Please clarify via clearer claim language.

C. Claim 1, preamble: It is not clear what "characteristics" are meant to be "extracted and visually displayed"

D. Claim 1, step A. The step addresses "a process of superimposing plural molecules"; however, it is not clear what "superimposing" means – is it superposing presumably corresponding atoms, or it is functional groups with each other between plural molecules, or it is a subjective superposition of different molecules one atop the other, etc.

Consequently, it is not clear in step B what is the meaning of "thus superimposed".

E. Claim 1, steps C, B1: The term "respective" in the phrase "respective atoms" is not clear. The term "respective" is a relative term, but no standard of reference has been provided with which to determine whether a particular atoms are "respective" or not.

F. Claim 1, step C. The meaning of calculating interactions between atoms and points is not clear.

How atoms interact with points?

If the by points the pseudo-atoms are meant (which are being simply a set of coordinates), what kind of interaction of atoms with set of coordinates is meant?

And how such interactions are being "calculated"?

Furthermore, with respect to claim 3, how an interaction such as electrostatic or hydrophobic" can be calculated for interaction between an atom and a point or a set of coordinates?

G. Claim 1, step D: Since the nature of "calculating interactions" is unclear, it is equally unclear how the interactions are being analyzed.

Note that in view of the vagueness and indefiniteness of the claims, as addressed above, rejections over prior art are not being applied at this point.

Claim Rejections - 35 U.S.C. § 101/ 112-1

The following is a quotation of the 35 U.S.C. § 101:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. The pending claims have been reviewed in light of the Utility Examination Guidelines and Guidelines for Examination of Patent Applications under 35 U.S.C. 112, first paragraph, "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1092-1111, Friday, January 5, 2001.

The examiner is using the following definitions in evaluating the claims for utility.

"Specific" - A utility that is *specific* to the subject matter claimed. This contrasts with a *general* utility that would be applicable to the broad class of the invention.

"Substantial" - A utility that defines a "real world" use. Utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities. The following are examples of situations that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use and, therefore, do not define "substantial utilities":

- A. Basic research such as studying the properties of the claimed product itself or the mechanisms in which the material is involved.
- B. A method of treating an unspecified disease or condition. (Note, this is in contrast to the general rule that treatments of specific diseases or conditions meet the criteria of 35 U.S.C. § 101.)
- C. A Method of assaying for or identifying a material that itself has no "specific and/or substantial utility".
- D. A method of making a material that itself has no specific, substantial, and credible utility.
- E. A claim to an intermediate product for use in making a final product that has no specific, substantial, and credible utility.

"Credible" - Credibility is assessed from the perspective of one of ordinary skill in the art in view of the disclosure and any other evidence of record that is probative of the applicant's assertions. That is, the assertion is an inherently unbelievable undertaking or involves implausible scientific principles.

"Well-established" - a specific, substantial, and credible utility which is well known, immediately apparent, or implied by the specification's disclosure of the properties of a material, alone or taken with the knowledge of one skilled in the art.

See also the MPEP at §§ 2107 - 2107.02.

Claims 1,3,4,6 are rejected under 35 U.S.C. § 101 because the claimed invention lacks patentable utility due to its not being supported by either specific and/or substantial utility or a well established utility.

Claims 1,3,4,6 are rejected under 35 U.S.C. § 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility. The claims are drawn to a method of displaying characteristics of a compound; however, there is no relation of the claimed method steps, directed to interactions between atoms of a plurality molecules with "representative points", and a[n unidentified] compound. Thus, neither specific, nor substantial utility can be identified. At best, the invention as claimed is an invitation for a basic research.

Claims 1,3,4,6 are also rejected under 35 U.S.C. §112, first paragraph. Specifically, since the claimed invention is not supported by either a credible asserted utility or a well established utility, one skilled in the art would not know how to use the claimed invention.

Claim Rejections - 35 U.S.C. § 101(non-statutory invention)

The following is a quotation of the 35 U.S.C. § 101:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1,3,4,6 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The following analysis of facts of this particular patent application follows the analysis suggested in the "Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility". Note that the text of the Guidelines below is italicized.

To satisfy section 101 requirements, the claim must be for a practical application of the § 101 judicial exception, which can be identified in various ways

- The claimed invention "transforms" an article or physical object to a different state or thing.*
- The claimed invention otherwise produces a useful, concrete and tangible result, based on the factors discussed below.*

The instant claims are drawn to a computer process of analyzing interactions between atoms of a plurality molecules and representative points in a virtual space. The method includes computational steps of superposing molecules in virtual space, conducting cluster analysis, and calculating and analyzing interactions between atoms in the virtual space. The claims do not recite any practical application of the method. Thus, in the instant case, the claimed invention does not "transform" an article or physical object to a different state or thing. This does not preclude the subject matter to be patentable as, for eligibility analysis, as

physical transformation is not an invariable requirement, but merely one example of how a mathematical algorithm [or law of nature] may bring about a useful application. If the examiner determines that the claim does not entail the transformation of an article, then the examiner shall review the claim to determine if the claim provides a practical application that produces a useful, tangible and concrete result. In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible and concrete." The claim must be examined to see if it includes anything more than a § 101 judicial exception. If the claim is directed to a practical application of the § 101 judicial exception producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S.C. § 101. If the examiner does not find such a practical application, the examiner has determined that the claim is nonstatutory.

The question is thus whether the final result achieved by the claimed invention is a result which satisfies all three criteria of being useful, and concrete, and tangible. In

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determining if the instant claims are useful, tangible, and concrete, the Examiner must determine each standard individually. For a claim to be "useful," the claim must produce a result that is specific, substantial, and credible. For a claim to be "tangible," the claim must set forth a practical application of the invention that produces a real-world result. For a claim to be "concrete," the process must have a result that can be substantially repeatable or the process must substantially produce the same result again.

Furthermore, the useful, tangible, and concrete result must be either explicitly recited in the claim itself or inherently flow through therefrom, rather than merely addressed in the specification.

In addition, a claim must be limited only to statutory embodiments - thus, if the claim is broader than the statutory embodiments of the claim, the Examiner must reject the claim as non-statutory.

(1) "USEFUL RESULT"

When the examiner has reason to believe that the claim is not for a practical application that produces a useful result, the claim should be rejected, thus requiring the applicant to distinguish the claim from the three § 101 judicial exceptions to patentable subject matter by specifically reciting in the claim the practical application. In such cases, statements in the specification describing a practical application may not be sufficient to satisfy the requirements for section 101 with respect to the claimed invention.

The instant claims do not include any useful result. For an invention to be "useful" it must satisfy the utility requirement of section 101, i.e., it has to be (i) specific, (ii) substantial and (iii) credible. As discussed in the utility rejection above, the invention does not satisfy the criteria of utility requirements as not being specific and substantial.

Furthermore, claims must be limited only to statutory embodiments. The instant claims seem to be directed to calculation of an abstract interactions between points in the space with atoms of molecules which provides no "real world" result.

(2) "TANGIBLE RESULT"

The tangible requirement does not necessarily mean that a claim must either be tied to a different state or thing. However, the tangible requirement does require that the claim must recite more than a § 101 judicial exception, in that the process claim must set forth a practical application of that § 101 judicial exception to produce a real-world result. The opposite meaning of "tangible" is "abstract."

The instant claims do not include any tangible result. A tangible requirement requires that the claim must set forth a practical application of the computational steps to produce a real-world result. No practical result is recited in the claims; thus the instant claims do not include any tangible result.

(3) "CONCRETE RESULT"

Usually, this question arises when a result cannot be assured. In other words, the process must have a result that can be substantially repeatable or the process must substantially produce the same result again. The opposite of "concrete" is unrepeatable or unpredictable.

Note that the focus is on the result, not the steps themselves. For example, concrete data processing steps could still produce an unrepeatable result if the data being processed is subjective. However, the mere fact that the result is an estimate, prediction or other approximation that may not ultimately be found to be accurate is not a determinative factor for concreteness. Thus, an assured result refers to repeatability and ability to achieve a result rather than ultimate accuracy of the result.

In the instant case, the method is not concrete, as it does not seem to be producing the same result if repeated by another person.

The method is directed to analysis of interaction of atoms of molecules superposed in virtual space. As discussed in the specification, p. 2, last paragraph

The approach of superposing atoms with each other has a disadvantage that researcher's subject is inevitably reflected, and ... subjective superposition of different molecules one atop the other by a researcher may result in something which is quite different from superposition of conformations in which actual molecules interact

Even though the cited section of specification addresses prior art in background information, the claimed method is directed to post-superposition steps (see p. 3, line 16), therefore, the issues addressed above remain. Thus, the method comprises a step of "subjective superposition of different molecules one atop the other by a researcher", which will result in a method which is not "concrete".

Taken together, the claims are directed to non-statutory subject matter as the claimed invention does not "transform" an article or physical object to a different state or thing and the final result achieved by the claimed invention does not satisfy all three criteria of being useful, and concrete, and tangible.

Furthermore, in regard to claims 4,6, "Computer-Related Inventions" section of the MPEP at section 2106, Part IV, subpart B, also clarifies that claiming non-statutory subject matter on a computer medium or in software does not prevent this rejection.

Conclusion.

No claims are allowed

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Borin whose telephone number is (571) 272-0713. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran can be reached on (571) 272-0720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Borin, Ph.D./
Primary Examiner, Art Unit 1631

mlb